In The Claims:

CLAIMS 1-282. (PREVIOUSLY CANCELLED)

CLAIM 283. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 284. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion or portions on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity

nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 285. (CURRENTLY AMENDED) A composition of matter comprising: a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 286. (CURRENTLY AMENDED) A composition of matter comprising: a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 287. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 288. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more non-radioactive signalling entities p substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 289. (CURRENTLY AMENDED) A composition of matter comprising: a complex which comprises:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 290. (CURRENTLY AMENDED) A composition of matter comprising: a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 291. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal.

CLAIM 292. (CURRENTLY AMENDED) A composition of matter comprising:
a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a- molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal.

CLAIM 293. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal.

CLAIM 294. (CURRENTLY AMENDED) A composition of matter comprising:
a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal.

CLAIM 295. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288; 289, 290, 291, 292, 293 or 294, wherein said analyte comprises a biological system.

CLAIM 296. (PREVIOUSLY ADDED) The composition according to claim 295, wherein said biological system comprises at least one member selected from the group consisting of a virus or a viral component thereof, and a cell or a cellular component thereof.

CLAIM 297. (PREVIOUSLY ADDED) The composition according to claim 296, wherein said cell or component thereof comprises a bacterium or a bacterial component thereof.

CLAIM 298. (PREVIOUSLY ADDED) The composition according to claim 295, wherein said biological system comprises a pathogen or a component thereof.

CLAIM 299. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said analyte is selected from the group consisting of a nucleic acid and a protein.

CLAIM 300. (PREVIOUSLY ADDED) The composition according to claim 299, wherein said analyte nucleic acid is selected from the group consisting of an oligo- or polyribonucleotide, an oligo- or polydeoxyribonucleotide, a poly-purine, a poly-pyrimidine,and a nucleotide analog-containing nucleic acid polymer, or any combination of the foregoing.

CLAIM 301. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion comprises a low molecular weight organic compound.

CLAIM 302. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of an antigen and an antibody.

CLAIM 303. (PREVIOUSLY ADDED) The composition according to claim 302, wherein said antibody comprises a polyclonal or a monoclonal antibody.

CLAIM 304. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of a saccharide and a lectin.

CLAIM 305. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of a hormone and a receptor therefor.

CLAIM 306. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of an enzyme, an allosteric effector, an enzyme substrate and an enzyme cofactor.

CLAIM 307. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of a ligand and a receptor therefor.

CLAIM 308. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion is selected from the group consisting of a protein and a protein receptor therefor.

CLAIM 309. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging recognizing first portion comprise a nucleic acid.

CLAIM 310. (PREVIOUSLY ADDED) The composition according to claim 309, wherein said nucleic acid comprises an oligo- or polynucleotide.

CLAIM 311. (PREVIOUSLY ADDED) The composition according to claim 310, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

CLAIM 312. (PREVIOUSLY ADDED) The composition according to claim 310 wherein said oligo- or polynucleotide comprises one or more nucleotides modified on the sugar phosphate, base, or combinations thereof.

CLAIM 313. (PREVIOUSLY ADDED) The composition according to claim 310, wherein said oligo- or polynucleotide is single-stranded or partially double-stranded.

CLAIM 314. (PREVIOUSLY ADDED) The composition according to claim 310, wherein said oligo- or polynucleotide is circular or linear.

CLAIM 315. (PREVIOUSLY ADDED) The composition according to claim 310, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, an oligo- or polydeoxyribonucleotide, a poly-purine, a poly-pyrimidine and a nucleotide analog-containing oligo- or polynucleotide, or any combination of the foregoing.

CLAIM 316. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, .291, 292, 293 or 294, wherein said nucleic acid sequence or segment in the molecular bridging entity second portion comprises an oligo- or polynucleotide.

CLAIM 317. (PREVIOUSLY ADDED) The composition according to claim 315, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

CLAIM 318. (PREVIOUSLY ADDED) The composition according to claim 316, wherein said oligo- or polynucleotide comprises one or more nucleotides modified on the sugar, phosphate, base or combinations thereof.

CLAIM 319. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said nucleic acid sequences or segments in the molecular bridging entity second portion is single-stranded or partially double-stranded.

CLAIM 320. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said nucleic acid sequences or segments in the molecular bridging entity second portion is linear or circular.

CLAIM 321. (PREVIOUSLY ADDED) The composition according to claim 316, wherein said oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, an oligo- or polydeoxyribonucleotide, a poly-purine, a poly-pyrimidine and a nucleotide analog-containing oligo- or polynucleotide, or any combination of the foregoing.

CLAIM 322. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said nucleic acid sequences or segments in the molecular bridging entity second portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, an M13 phage, or, an M 13 phage variant.

CLAIM 323. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging entity second portion comprises a nucleic acid sequence or segment of repeating low complexity.

CLAIM 324. (PREVIOUSLY ADDED) The composition according to claim 323, wherein said nucleic acid sequence or segment of repeating low complexity is selected from the group consisting of a poly G or polydeoxy G, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxy GAT, and poly GTA or polydeoxy GTA.

CLAIM 325. (PREVIOUSLY ADDED) The composition according to claim 310, wherein said molecular bridging entity first portion and said molecular bridging entity nucleic acid second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

CLAIM 326. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said nucleic acid sequences or segments in the molecular bridging entity second portion are covalently attached to one another.

CLAIM 327. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signalling entity nucleic acid portion comprises an oligo- or polynucleotide.

CLAIM 328. (PREVIOUSLY ADDED) The composition according to claim 327, wherein said signalling entity oligo- or polynucleotide is selected from the group consisting of an oligo- or polyribonucleotide, an oligo- or polydeoxyribonucleotide, a poly-purine, a poly-pyrimidine and a nucleotide analog-containing oligo- or polvnucleoide, or any combination of the foregoing.

CLAIM 329. (PREVIOUSLY ADDED) The composition according to claim 327, wherein said oligo- or polynucleotide comprises a modified oligo- or polynucleotide.

CLAIM 330. (PREVIOUSLY ADDED) The composition according to claim 327, wherein said oligo- or polynucleotide comprises one or more nucleotides modified on the sugar, phosphate, base or combinations thereof.

CLAIM 331. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signalling entity nucleic acid portion is single-stranded or partially double-stranded.

CLAIM 332. (PREVIOUSLY ADDED) The composition according to any of the claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signalling entity nucleic acid portion is linear or circular.

CLAIM 333. (PREVIOUSLY ADDED) The composition according to claim 332, wherein said signalling entity nucleic acid portion is a polymer derived from a linear or circular nucleic acid molecule covalently attached to a signal generating portion or a signalling chemical moiety.

CLAIM 334. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signalling entity nucleic acid portion is derived from a phage selected from the group consisting of a T even phage, a filamentous phage, and an M 13 phage, or an M 13 phage variant.

CLAIM 335. (PREVIOUSLY ADDED) The composition according to claim 329, wherein said signalling entity modified oligo- or polynucleotide comprises a naturally occurring modified oligo- or polynucleotide.

CLAIM 336. (PREVIOUSLY ADDED) The composition according to claim 335, wherein said signalling entity modified oligo- or polynucleotide carries a cloned insert.

CLAIM 337. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signalling entity nucleic acid portion comprises a nucleic acid sequence or segment of repeating low complexity.

CLAIM 338. (PREVIOUSLY ADDED) The composition according to claim 337, wherein said nucleic acid sequence or segment of repeating low complexity is selected from the group consisting of a poly G or polydeoxy G, poly GT or polydeoxy GT, poly C or polydeoxy C, poly T or polydeoxy T, poly A or polydeoxy A, poly CA or polydeoxy CA, poly GA or polydeoxy GA, poly GAT or polydeoxy GAT, and poly GTA or polydeoxy GTA.

CLAIM 339. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are capable of directly providing a detectable signal.

CLAIM 340. (PREVIOUSLY ADDED) The composition according to claim 339, wherein said direct signal providing signal generating portion comprises a radioactive compound.

CLAIM 341. (PREVIOUSLY ADDED) The composition according to claim 339, wherein said direct signal providing signal generating portion is selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

CLAIM 342. (PREVIOUSLY ADDED) The composition according to claim 339, wherein said direct signal providing signal generating portion comprises an enzyme.

CLAIM 343. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are indirectly capable of indirectly providing a detectable signal.

CLAIM 344. (PREVIOUSLY ADDED) The composition according to claim 343, wherein said indirect signal providing signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

CLAIM 345. (PREVIOUSLY ADDED) The composition according to claim 343, wherein said indirect signal providing signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

CLAIM 346. (PREVIOUSLY ADDED) The composition according to claim 343, wherein said indirect signal providing signal generating portion comprises a compound capable of binding to an insoluble phase.

CLAIM 347. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement,, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement, and a radioactive measurement.

CLAIM 348. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is greater than 5.

CLAIM 349. (PREVIOUSLY ADDED) The composition according to claim 348, wherein the ratio is greater than 10.

CLAIM 350. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein the ratio of the signal generating portions or the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is greater than 1.

CLAIM 351. (PREVIOUSLY ADDED) The composition according to claim 350, wherein the ratio is greater than 5.

CLAIM 352. (PREVIOUSLY ADDED) The composition according to claim 351, wherein the ratio is greater than 10.

CLAIM 353. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is greater than 1, and the ratio of the signal generating portions or the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities are greater than 1.

CLAIM 354. (PREVIOUSLY ADDED) The composition according to claim 353, wherein one or both ratios are greater than 5.

CLAIM 355. (PREVIOUSLY ADDED) The composition according to claim 354, wherein one or both ratios are greater than 10.

CLAIM 356. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein the ratio of signalling entities to molecular bridging entity is greater than 5.

CLAIM 357. (PREVIOUSLY ADDED) The composition according to claim 356, wherein the ratio is greater than 10.

CLAIM 358. (PREVIOUSLY ADDED) The composition according to any of claims 284, 286, 288, 290, 293 or 294, wherein the analyte is immobilized.

CLAIM 359. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein the molecular bridging entity is immobilized.

CLAIM 360. (CURRENTLY AMENDED) An article of manufacture comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion nucleic acid sequences or segments, and one or more signal generating portions, each capable of providing a detectable signal.

CLAIM 361. (CURRENTLY AMENDED) An article of manufacture comprising:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion nucleic acid sequences or segments, and one or more polynucleotides which have been chemically modified or artificially altered.

CLAIM 362. (PREVIOUSLY ADDED) The article of manufacture according to claims 360 or 361, further comprising the analyte.

CLAIM 363. (PREVIOUSLY CANCELLED)

CLAIM 364. (PREVIOUSLY ADDED) The process according to claims 443, 445, or 447 characterized in that said forming step comprises contacting said analyte with said bridging entity to form a first complex and thereafter contacting the first complex with said signalling entity to form said complex recited in said forming step.

CLAIM 365. (PREVIOUSLY ADDED) The process according to claims 443, 445, or 447, characterized in that said forming step comprises contacting said bridging entity with said signalling entity under conditions sufficient to form a first complex and thereafter contacting the first complex with said analyte under conditions sufficient to form said complex recited in said forming step.

366. (CURRENTLY AMENDED) The process according to claim ~~363~~ 443, wherein detecting is directly carried out by means of a detectable signal provided by said signal generating portion.

CLAIM 367. (PREVIOUSLY ADDED) The process according to claim 366, wherein said detecting step the direct detectable signal provided by said signal generating portion comprises a radioactive compound.

CLAIM 368. (PREVIOUSLY ADDED) The process according to claim 366, wherein said detecting step the direct detectable signal is provided by a member selected from the group consisting of a flurogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

CLAIM 369. (PREVIOUSLY ADDED) The process according to claim 368, wherein said detecting step the signal generating portion comprises an enzyme.

CLAIM 370. (CURRENTLY AMENDED) The process according to claim ~~363~~ 443, wherein detecting is indirectly carried out by means of a detectable signal provided by said signal generating portion.

CLAIM 371. (PREVIOUSLY ADDED) The process according to claim 370, wherein said detecting step the signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

CLAIM 372. (PREVIOUSLY ADDED) The process according to claim 370, wherein said detecting step the signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

CLAIM 373. (PREVIOUSLY ADDED) The process according to claim 370, wherein said detecting step the signal generating portion comprises a compound capable of binding to an insoluble phase.

CLAIM 374. (CURRENTLY AMENDED) The process according to claim ~~363~~ 443, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement, a radioactive measurement and a binding step on an insoluble phase.

CLAIM 375. (CURRENTLY AMENDED) The process according to claim ~~363~~ 443, wherein the analyte is fixed or immobilized.

CLAIM 376. (PREVIOUSLY ADDED) The process according to claim 375, wherein fixing or immobilizing the analyte takes place before forming the complex in said complex forming step.

CLAIM 377. (PREVIOUSLY ADDED) The process according to claim 375, wherein fixing or immobilizing the analyte takes place after forming the complex in said complex forming step.

CLAIM 378. (PREVIOUSLY ADDED) The process according to claim 375, further comprising one or more washing steps.

CLAIM 379. (CURRENTLY AMENDED) The process according to claim ~~363~~ 443, wherein the molecular bridging entity is immobilized.

CLAIM 380. (PREVIOUSLY ADDED) The process according to claim 279, further comprising one or more washing steps.

CLAIM 381. (PREVIOUSLY CANCELLED)

CLAIM 382. (PREVIOUSLY ADDED) The process according to claims 449, 451, or 453, characterized in that said forming step comprises contacting said analyte with said bridging entity to form a first complex and thereafter contacting the first complex with said signalling entity to form said complex recited in said forming step.

CLAIM 383. (PREVIOUSLY ADDED) The process according to claims 449, 451 or 453, characterized in that said forming step comprises contacting said bridging entity with said signalling entity under conditions sufficient to form a first complex and thereafter contacting the first complex with said analyte to form said complex recited in said forming step.

CLAIM 384. (CURRENTLY AMENDED) The process according to claim ~~381~~ 444, wherein detecting is directly carried out by means of a detectable signal provided by said signal generating portion.

CLAIM 385. (PREVIOUSLY ADDED) The process according to claim 384, wherein said detecting step the direct detectable signal provided by said signal generating portion comprises a radioactive compound.

CLAIM 386. (PREVIOUSLY ADDED) The process according to claim 384, wherein said detecting step the direct detectable signal is provided by a member selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound and an electron dense compound.

CLAIM 387. (PREVIOUSLY ADDED) The process according to claim 386, wherein said detecting step the signal generating portion comprises an enzyme.

CLAIM 388. (CURRENTLY AMENDED) The process according to claim ~~381~~ 444, wherein detecting is indirectly carried out by means of a detectable signal provided by said signal generating portion.

CLAIM 389. (PREVIOUSLY ADDED) The process according to claim 386, wherein said detecting step the signal generating portion is selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand and an enzyme.

CLAIM 390. (PREVIOUSLY ADDED) The process according to claim 388, wherein said detecting step the signal generating portion comprises a polynucleotide sequence capable of recognizing a signal-containing moiety.

CLAIM 391. (PREVIOUSLY ADDED) The process according to claim 388, wherein said detecting step the signal generating portion comprises a compound capable of binding to an insoluble phase.

CLAIM 392. (CURRENTLY AMENDED) The process according to claim ~~381~~ 444, wherein said signal generating portion is capable of being detected by a member selected from the group consisting of an enzymatic measurement, a fluorescent measurement, a phosphorescent measurement, a chemiluminescent measurement, a colorimetric measurement, a microscopic measurement, an electron density measurement, a radioactive measurement and a binding step on an insoluble phase.

CLAIM 393. (CURRENTLY AMENDED) The process according to claim ~~381~~ 444, wherein the analyte is fixed for immobilized.

CLAIM 394. (PREVIOUSLY ADDED) The process according to claim 393, wherein fixing or immobilizing the analyte takes place before forming the complex in said complex forming step.

CLAIM 395. (PREVIOUSLY ADDED) The process according to claim 393, wherein fixing or immobilizing the analyte takes place after forming the complex in said complex forming step.

CLAIM 396. (PREVIOUSLY ADDED) The process according to claim 393, further comprising one or more washing steps.

CLAIM 397. (CURRENTLY AMENDED) The process according to claim ~~381~~ 444, wherein the molecular bridging entity is immobilized.

CLAIM 398. (PREVIOUSLY ADDED) The process according to claim 397, further comprising one or more washing steps.

CLAIM 399. (PREVIOUSLY CANCELLED)

CLAIM 400. (PREVIOUSLY ADDED) The process according to claims 455, 457 or 458, characterized in that said forming step comprises contacting said fixed or immobilized analyte with said bridging entity to form a first complex and thereafter contacting the first complex with said signalling entity to form said complex comprising said composition and said analyte recited in said forming step.

CLAIM 401. (PREVIOUSLY ADDED) The process according to claims 455, 457 or 458, characterized in that said forming step comprises contacting said bridging entity with said signalling entity under conditions sufficient to form a first complex and thereafter contacting the first complex with said fixed or immobilized analyte under conditions sufficient to form said complex comprising said composition and said analyte recited in said forming step.

CLAIM 402. (CURRENTLY AMENDED) The process according to claim ~~399~~ 445, further comprising one or more washing steps prior to detection.

CLAIM 403. (PREVIOUSLY ADDED) The process according to claim 400, further comprising one or more washing steps prior to detection.

CLAIM 404. (PREVIOUSLY ADDED) The process according to claim 401, further comprising one or more washing steps prior to detection.

CLAIM 405. (PREVIOUSLY CANCELLED)

CLAIM 406. (PREVIOUSLY ADDED) The process according to claim 459, characterized in that said forming step comprises contacting said fixed or immobilized analyte with said bridging entity to form a first complex and thereafter contacting the first complex with said signalling entity to form said complex comprising said composition and said analyte recited in said forming step.

CLAIM 407. (PREVIOUSLY ADDED) The process according to claim 459 characterized in that said forming step comprises contacting said bridging entity with said signalling entity under conditions sufficient to form a first complex and thereafter contacting the fixed or immobilized analyte with the first complex under conditions sufficient to form said complex comprising said composition and said analyte recited in said forming step.

CLAIM 408. (CURRENTLY AMENDED) The process according to claim ~~405~~ 446, further comprising one or more washing steps prior to detection.

CLAIM 409. (PREVIOUSLY ADDED) The process according to claim 406, further comprising one or more washing steps prior to detection.

CLAIM 410. (PREVIOUSLY ADDED) The process according to claim 407, further comprising one or more washing steps prior to detection.

CLAIM 411. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable portion on said analyte, and a second portion comprising one, or more nucleic acid sequences or segments; and

(ii) a container carrying more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion nucleic acid sequence or segment, and one or more signal generating portions, each such portion being capable of providing a detectable signal.

CLAIM 412. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a container carrying a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable portion, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion, and one or more signal generating portions, each such portion being capable of providing a detectable signal.

CLAIM 413. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a container carrying more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a container carrying more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion to form a polynucleotide hybrid, and one or more signal generating portions, capable of providing a detectable signal.

CLAIM 414. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon comprising as components thereof:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 415. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a complex which comprises:

(i) more than one molecular bridging entity, each such, entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

(ii) more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal.

CLAIM 416. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more polynucleotides which have been chemically modified or artificially altered.

CLAIM 417. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion to form a polynucleotide hybrid, and one or more; polynucleotides which have been chemically modified or artificially altered.

CLAIM 418. (PREVIOUSLY ADDED) The kit according to any of claim 411, 412, 413, 414 or 415, further comprising means to detect a signal from said signal generating portion.

CLAIM 419. (PREVIOUSLY ADDED) The kit according to claims 416 or 417, further comprising means to detect a signal from said one or more chemically modified or artificially altered polynucleotides.

CLAIM 420. (PREVIOUSLY ADDED) The kit according to any of claims 411, 412, 413, 414 or 415, wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is greater than 5.

CLAIM 421. (PREVIOUSLY ADDED) The kit according to claim 420, wherein the ratio is greater than 10.

CLAIM 422. (PREVIOUSLY ADDED) The kit according to any of claims 411, 412, 413, 414 or 415, wherein the ratio of the signal generating portions to the nucleic acid portion in any or all of the signalling entities is greater than 1.

CLAIM 423. (PREVIOUSLY ADDED) The kit according to claims 416 or 417, wherein the ratio of the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is greater than 1.

CLAIM 424. (PREVIOUSLY ADDED) The kit according to claim 423, wherein the ratio is greater than 5.

CLAIM 425. (PREVIOUSLY ADDED) The kit according to claim 424, wherein the ratio is greater than 10.

CLAIM 426. (PREVIOUSLY ADDED) The kit according to, any of claims 411, 412, 413, 414 or 415, wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is greater than 1, and the ratio of the signal generating portions to the nucleic acid portion in any or all of the signalling entities is greater than 1.

CLAIM 427. (PREVIOUSLY ADDED) The kit according to claims 416 or 417, wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is greater than 1, and the ratio of the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is greater than 1.

CLAIM 428. (PREVIOUSLY ADDED) The kit according to claim 426, wherein one or both ratios are greater than 5.

CLAIM 429. (PREVIOUSLY ADDED) The kit according to claim 428, wherein one or both ratios are greater than 10.

CLAIM 430. (PREVIOUSLY ADDED) The kit according to claim 427, wherein one or both ratios are greater than 5.

CLAIM 431. (PREVIOUSLY ADDED) The kit according to claim 430, wherein one or both ratios are greater than 10.

CLAIM 432. (PREVIOUSLY ADDED) The kit according to any of claims 411, 412, 413, 414, 415, 416 or 417, wherein the ratio of signalling entities to the molecular bridging entity is greater than 5.

CLAIM 433. (PREVIOUSLY ADDED) The kit according to claim 432, wherein the ratio is greater than 10.

CLAIM 434. (CURRENTLY AMENDED) The kit according to any of claims 411, 412, 413, 414 or 415, wherein said signal generating portion is carried in a separate container from the container carrying the signalling entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion.

CLAIM 435. (PREVIOUSLY ADDED) The kit according to claims 416 or 417, wherein said one or more chemically modified or artificially altered polynucleotides are carried in a separate container from the container carrying the signalling entity comprising a nucleic acid, portion capable of binding to or hybridizing with said bridging entity nucleic acid second portion.

CLAIM 436. (PREVIOUSLY ADDED) The kit according to any of claims 411, 412, 413, 414, 415, 416 or 417, wherein said analyte comprises a biological system.

CLAIM 437. (PREVIOUSLY ADDED) The kit according to any of claims 411, 412, 413, 414, 415, 416 or 417, further comprising one or more solid supports.

CLAIM 438. (PREVIOUSLY ADDED) The composition according to claims 291, 292, 293 or 294, wherein said one or more chemically modified or artificially altered polynucleotides comprise one or more nucleic acid analogs.

CLAIM 439. (PREVIOUSLY ADDED) The process according to claims 442, 443, 445, 447, 449, 451, 453, 455, 457, 458 or 459, wherein said step of detecting the analyte by a signal provided by said signal generating portion or portions present in said complex comprises carrying out a binding step on an insoluble phase.

CLAIM 440. (PREVIOUSLY CANCELLED)

CLAIM 441. (PREVIOUSLY ADDED) The composition according to claim 309, wherein the nucleic acid in said molecular bridging entity recognizing first portion and said molecular bridging entity nucleic acid second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

CLAIM 442. (PREVIOUSLY ADDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing the composition of claim 462;

forming a complex comprising said composition and said analyte; and detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 443. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 444. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 445. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising:

a first part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal; and

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating, portion or portions present in said complex.

CLAIM 446. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising a complex which comprises:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 447. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:
providing a composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 448. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with

said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 449. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion or portions on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

forming a complex comprising the components of said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 450. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

forming a complex comprising the components of said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 451. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;.

forming a complex comprising the components of said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 452. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

forming a complex comprising the components of said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 453. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;

forming a complex comprising the components of said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 454. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising;

providing a composition of matter comprising a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entitles substantially, incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;

forming a complex comprising the components of said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 455. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition which comprises:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

fixing or immobilizing said analyte or a sample containing said analyte to a solid support;

forming a complex comprising, said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 456. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition of matter comprising a complex which comprises: a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portion capable of providing a detectable signal;

fixing or immobilizing said analyte or a sample containing said analyte to a solid support;

forming a complex comprising said composition and said analyte; and detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 457. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition comprising:

a first part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding~~

~~to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

fixing or immobilizing said analyte or a sample containing said analyte to a solid support;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 458. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

providing a composition comprising:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

fixing or immobilizing said analyte or a sample containing said analyte to a solid support;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by said signal generating portion or portions present in said complex.

CLAIM 459. (CURRENTLY AMENDED) A process for detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

fixing or immobilizing said analyte or a sample containing said analyte to a solid support;

providing a composition comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by means of said signal generating portion or portions present in said complex.

CLAIM 460. (CURRENTLY AMENDED) A process for .detecting an analyte having one or more molecularly recognizable portions thereon, comprising:

fixing or Immobilizing said analyte or a sample containing said analyte to a solid support;

providing a composition comprising a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of providing a detectable signal;

forming a complex comprising said composition and said analyte; and

detecting said analyte by a signal provided by means of said signal generating portion or portions present in said complex.

CLAIM 461. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said signal generating portion or said one or more chemically modified or artificially altered polynucleotides are capable of being detected by a binding member in an insoluble phase.

CLAIM 462. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 286, 287, 288, 289, 291, 292, 293 or 294, wherein the nucleic acid in said molecular bridging entity recognizing first portion and said molecular bridging entity nucleic acid second portion are incapable of hybridizing to identical oligo- or polynucleotide sequences.

CLAIM 463. (PREVIOUSLY ADDED) The composition according to any of claims 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293 or 294, wherein said molecular bridging entity comprises a polymer selected from the group consisting of a nucleic acid-protein polymer, a nucleic acid-polypeptide polymer, a nucleic acid-polysaccharide polymer and a polypeptide-polysaccharide polymer, said polymer comprising one or more chemically modified purines, one or more chemically modified pyrimidines, one or more chemically modified sugar moieties, or one or more chemically modified phosphate moieties, or a combination of any of the foregoing.

CLAIM 464. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or

indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 465. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion or portions on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity

nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 466. (CURRENTLY AMENDED) A composition of matter comprising:
a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments;

and one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable

signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 467. (CURRENTLY AMENDED) A composition of matter comprising:

a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon;

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the

group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 468. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a

chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 469. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon;

a second part which comprises more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of d virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic

compound, a phosphorescent compound, a chromogenic compound, a chemiluminiescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 470. (CURRENTLY AMENDED) A composition of matter comprising: a complex which comprises:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a phosphorescent

compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 471. (CURRENTLY AMENDED) A composition of matter comprising:
a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon; more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable analyte portion, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said more than one bridging entity nucleic acid second portion, and one or more signal generating portions capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being

selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 472. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

a second part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group

consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 473. (CURRENTLY AMENDED) A composition of matter comprising:
a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent

compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 474. (CURRENTLY AMENDED) A composition of matter comprising:

a first part which comprises an analyte having one or more molecularly recognizable portions thereon, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof;

a second part which comprises a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

a third part which comprises one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group

consisting of a fluorogenic compound, a phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 475. (CURRENTLY AMENDED) A composition of matter comprising: a complex which comprises:

an analyte having one or more molecularly recognizable portions thereon; a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, said analyte molecularly recognizable portion comprising a biological system selected from the group consisting of a virus or a viral component thereof and a cell or a cellular component thereof, said cell or cellular component thereof comprising a bacterium or a bacterial component thereof, said first portion being selected from the group consisting of an antigen, a polyclonal or a monoclonal antibody, a hormone, a receptor, an enzyme, an allosteric effector, an enzyme substrate, an enzyme cofactor, a protein and a protein receptor, and a second portion comprising one or more nucleic acid sequences or segments; and

one or more non-radioactive signalling entities substantially incapable of binding to or hybridizing with the molecularly recognizable portion on said analyte, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more chemically modified or artificially altered polynucleotides capable of directly or indirectly providing a detectable signal, said direct signal providing signal generating portion being selected from the group consisting of a fluorogenic compound, a

phosphorescent compound, a chromogenic compound, a chemiluminescent compound, an electron dense compound, an enzyme, and said indirect signal providing signal generating portion being selected from the group consisting of an antibody, an antigen, a hapten, a receptor, a ligand, an enzyme, a polynucleotide sequence capable of recognizing a signal-containing moiety, and a compound capable of binding to an insoluble phase.

CLAIM 476. (PREVIOUSLY ADDED) The composition according to any of claims 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474 or 475, wherein said nucleic acid sequences or segments in the molecular bridging entity second portion, or said signalling entity nucleic acid portion, or both, are derived from the group consisting of a T even phage, a filamentous phage, and a M13 phage or an M13 phage variant.

CLAIM 477. (PREVIOUSLY ADDED) The composition according to any of claims 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474 or 475, wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from the group consisting of a number greater than 5 and a number greater than 10, and wherein the ratio of the signal generating portions or the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is selected from the group consisting of a number greater than 5 and a number greater than 10.

CLAIM 478. (PREVIOUSLY ADDED) The composition according to claim 477, wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity, and the ratio of the signal generating portions or the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is selected from the group consisting of a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 479. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable portion on said analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a container carrying more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion nucleic acid sequence or segment, and one or more signal generating portions, each such portion being capable of providing a detectable signal;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the signal generating portions to the nucleic acid portion in any or all of the

signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 480. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a container carrying a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable portion, and a second portion comprising one or more nucleic acid sequences or segments; and more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion, and one or more signal generating portions, each such portion being capable of providing a detectable signal;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the signal generating portions to the nucleic acid portion in any or all of the signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 481. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a container carrying more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

a container carrying more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion to form a polynucleotide hybrid, and one or more signal generating portions capable of providing a detectable signal;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the signal generating portions to the nucleic acid portion in any or all of the signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 482. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity

nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the signal generating portions to the nucleic acid portion in any or all of the signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 483. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a complex which comprises:

(i) more than one molecular bridging entity, each such entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

(ii) more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more signal generating portions capable of providing a detectable signal;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the signal generating portions to the nucleic acid portion in any or all of the signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 484. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion, and one or more polynucleotides which have been chemically modified or artificially altered;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein one or both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 485. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

a complex which comprises:

a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with a molecularly recognizable portion on an analyte, and a second portion comprising one or more nucleic acid sequences or segments; and

more than one non-radioactive signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion to form a polynucleotide hybrid, and one or more polynucleotides which have been chemically modified or artificially altered;

wherein the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity is selected from a number greater than 5 and a number greater than 10; or

wherein one or both the ratio of the nucleic acid sequences or segments in the second portion to the first portion of the molecular bridging entity and the ratio of the one or more chemically modified or artificially altered polynucleotides to the nucleic acid portion in any or all of the signalling entities is selected from a number greater than 1, a number greater than 5 and a number greater than 10.

CLAIM 486. (CURRENTLY AMENDED) The kit of any of claims 479, 480, 481, 482 or 483, wherein said signal generating portion is carried in a separate container from the container carrying the signalling entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion.

CLAIM 487. (CURRENTLY AMENDED) The kit of claims 484 or 485, wherein said one or more chemically modified or artificially altered polynucleotides are carried in a separate container from the container carrying the signalling entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity nucleic acid second portion.

CLAIM 488. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 443, said kit comprising as components thereof the first part and the second part of the composition provided in said process.

CLAIM 489. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 444, said kit comprising as components thereof said complex provided as a composition in said process.

CLAIM 490. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 445, said kit comprising as components thereof said first part and said second part provided as a composition in said process.

CLAIM 491. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 446, said kit comprising as components thereof said complex provided as a composition in said process.

CLAIM 492. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 447, said kit comprising as components thereof said first part and said second part provided as a composition in said process.

CLAIM 493. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 448, said kit comprising as components thereof said complex provided as a composition in said process.

CLAIM 494. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 449, said kit comprising as components thereof said first part, said second part and said third part provided as a composition in said process.

CLAIM 495. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 450, said kit comprising as components thereof said complex provided as a composition in said process.

CLAIM 496. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 451, said kit comprising as components thereof said first part, said second part and said third part provided as a composition in said process.

CLAIM 497. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 452, said kit comprising as components thereof said complex provided as a composition in said process.

CLAIM 498. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 453, said kit comprising as components thereof said first part, said second part and said third part provided as a composition in said process.

CLAIM 499. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 454, said kit comprising as components thereof said complex provided as a composition in said process.

CLAIM 500. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 455, said kit comprising as components thereof said first part and said second part provided as a composition and said solid support in said process.

CLAIM 501. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 456, said kit comprising as components thereof said complex provided as a composition and said solid support in said process.

CLAIM 502. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 457, said kit comprising as components thereof said first part and said second part provided as a composition and said solid support in said process.

CLAIM 503. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 458, said kit comprising as components thereof said composition provided and said solid support in said process.

CLAIM 504. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 459, said kit comprising as components thereof said first part and said second part provided as a composition and said solid support in said process.

CLAIM 505. (PREVIOUSLY ADDED) A kit for use in carrying out the process of claim 460, said kit comprising as components thereof said complex provided as a composition and said solid support in said process.

CLAIM 506. (PREVIOUSLY ADDED) A polynucleotide sequence covalently attached to an antibody.

CLAIM 507. (CURRENTLY AMENDED) ~~The polynucleotide sequence of claim 506, wherein said antibody is monoclonal~~ A polynucleotide sequence covalently attached to a monoclonal antibody.

CLAIM 508. (PREVIOUSLY ADDED) A polynucleotide sequence covalently attached to a lectin.

509. (CURRENTLY AMENDED) A polynucleotide sequence covalently attached to a non-nucleotidyl saccharide having up to 20 saccharide units.

CLAIM 510. (CURRENTLY AMENDED) A polynucleotide sequence covalently attached to a hormonal receptor.

CLAIM 511. (PREVIOUSLY ADDED) A polynucleotide sequence covalently attached to a hormone.

CLAIM 512. (CURRENTLY AMENDED) An isolated ~~A~~ DNA molecule carrying a polynucleotide portion which comprises a repeating low complexity sequence comprising ~~selected from the group consisting of poly dGT, poly dAC,~~ poly dCT ~~,~~ ~~poly dAT, poly dGC,~~ or poly dGA ~~, poly dG, poly dC, poly dT, poly dA, and a sequence or segment of repeating low complexity~~.

CLAIM 513. (CURRENTLY AMENDED) ~~A filamentous phage containing the~~ The DNA molecule of claim 512, wherein said DNA molecule is derived from a filamentous phage.

CLAIM 514. (CURRENTLY AMENDED) ~~The phage of claim 513, comprising~~ The DNA molecule of claim 513, wherein said filamentous phage is a M13 phage or a M13 phage variant.

CLAIM 515. (PREVIOUSLY ADDED) The DNA molecule of claim 512, wherein said sequence is an oligonucleotide.

CLAIM 516. (PREVIOUSLY ADDED) The DNA molecule of claim 512, further carrying a polynucleotide sequence complementary to a gene sequence or portion thereof of a nucleic acid containing organism.

CLAIM 517. (PREVIOUSLY ADDED) The DNA molecule of claim 516, wherein said organism is selected from the group consisting of a virus, a prokaryotic cell and a eukaryotic cell.

CLAIM 518. (PREVIOUSLY ADDED) The DNA molecule of claim 517, wherein said prokaryotic cell is a bacterium.

CLAIM 519. (PREVIOUSLY ADDED) The DNA molecule of claim 517, wherein said eukaryotic cell is a mammalian cell.

CLAIM 520. (CURRENTLY AMENDED) ~~A filamentous phage containing the~~ The DNA molecule of claim 516, wherein said DNA molecule is derived from a filamentous phage.

CLAIM 521. (CURRENTLY AMENDED) The ~~filamentous phage~~ DNA molecule of claim 520, ~~comprising~~ wherein said filamentous phage is a M13 phage or a M13 phage variant.

CLAIM 522. (CURRENTLY AMENDED) A circular DNA molecule covalently attached to a non-radiolabeled non-nucleotidyl signal generating moiety.

CLAIM 523. (CURRENTLY AMENDED) ~~A filamentous phage containing the~~ The circular DNA molecule of claim 522, wherein said circular DNA molecule is derived from a filamentous phage.

CLAIM 524. (CURRENTLY AMENDED) The DNA molecule of claim 522, further carrying a polynucleotide portion which comprises a repeating low complexity sequence selected from the group consisting of poly dGT, poly dAC, poly dCT, poly dAT, poly dGC, poly dGA, poly dG, poly dC, poly dT, poly dA, and any combination thereof ~~a sequence or segment of repeating low complexity~~.

CLAIM 525. (PREVIOUSLY ADDED) The circular DNA molecule of claim 522, which carries a polynucleotide portion which is rich in cytosine residues.

CLAIM 526. (CURRENTLY AMENDED) The DNA molecule of claim 524, wherein said repeating low complexity sequence is ~~an oligonucleotide~~ selected from the group consisting of poly dGT, poly dAC, poly dCT, poly dAT, poly dGC, poly dGA, poly dG, poly dC, and any combination thereof.

CLAIM 527. (PREVIOUSLY ADDED) The DNA molecule of claim 522, further carrying a polynucleotide portion which comprises a sequence coding for part or whole of a gene.

CLAIM 528. (CURRENTLY AMENDED) ~~The DNA molecule of claim 522, wherein said signal generating moiety~~ A circular DNA molecule covalently attached to a non-radiolabeled signal generating moiety that comprises an enzyme.

CLAIM 529. (CURRENTLY AMENDED) ~~The DNA molecule of claim 527, wherein said signal generating moiety comprises a biotin moiety~~ A circular DNA molecule comprising a polynucleotide that encodes part or all of a gene, wherein the DNA molecule is covalently attached to a non-radiolabeled signal generating moiety that comprises biotin.

CLAIM 530. (CURRENTLY AMENDED) ~~The DNA molecule of claim 527, wherein said signal generating moiety comprises an antibody~~ A circular DNA molecule comprising a polynucleotide that encodes part or all of a gene, wherein the DNA molecule is covalently attached to a non-radiolabeled signal generating moiety that comprises an antibody.

CLAIM 531. (CURRENTLY AMENDED) ~~The DNA molecule of claim 527, wherein said signal generating moiety comprises~~ A circular DNA molecule comprising a polynucleotide that encodes part or all of a gene, wherein the DNA molecule is covalently attached to a non-radiolabeled signal generating moiety that comprises a fluorogenic compound.

CLAIM 532. (PREVIOUSLY ADDED) The process of claim 443, wherein said analyte is a DNA sequence, said bridging entity is a single-stranded DNA sequence, and said signalling entities are single-stranded DNA sequences.

CLAIM 533. (PREVIOUSLY ADDED) The process of claim 532, wherein said bridging entity is derived from a filamentous phage.

CLAIM 534. (PREVIOUSLY ADDED) The process of claim 533, wherein said signalling entities are derived from filamentous phages.

CLAIM 535. (PREVIOUSLY ADDED) The process of claim 534, wherein said bridging entity codes for a gene product or fragment thereof, and said forming step comprises either (i) contacting said analyte with said bridging entity to form a first complex and thereafter contacting said first complex with said signalling entities to form said detectable complex or (ii) contacting said bridging entity with said signalling entities to form a first complex and thereafter contacting said first complex with said analyte to form said detectable complex.

CLAIM 536. (PREVIOUSLY ADDED) The process of claim 443, wherein said analyte is a polynucleotide, said one or more nucleic acid sequences or segments of said second portion are repeating low complexity nucleic acid sequences or segments, and said one or more nucleic acid sequences or segments of said second portion are incapable of hybridizing to the analyte.

CLAIM 537. (PREVIOUSLY ADDED) The process of claim 536, wherein said signal is amplified because the ratio of the signalling entities to the bridging entity exceeds 5.

CLAIM 538. (PREVIOUSLY ADDED) The kit of claim 411, wherein said analyte is a polynucleotide, said one or more nucleic acid sequences or segments of said second portion are repeating low complexity nucleic acid sequences or segments, and said one or more nucleic acid sequences or segments of said second portion are incapable of hybridizing to the analyte.

CLAIM 539. (PREVIOUSLY ADDED) The kit of claim 538, wherein said signal is amplified because the ratio of the signalling entities to the bridging entity exceeds 5.

CLAIM 540. (PREVIOUSLY ADDED) The process of claim 443, wherein said analyte is a single-stranded DNA sequence fixed to a solid support, said bridging entity comprises non-naturally occurring or artificially modified DNA, said bridging entity first portion comprises a linear single-stranded polynucleotide sequence, said bridging entity first portion is covalently bound to said bridging entity second portion, and said bridging entity second portion is single-stranded and linear and comprises more than one of said nucleic acid sequences or segments.

CLAIM 541. (PREVIOUSLY ADDED) The process of claim 540, wherein said signalling entities are single-stranded oligo- or polynucleotide sequences, said bridging entity first portion is capable of encoding a gene product or fragment thereof, and the process further comprises one or more washing steps prior to detection.

CLAIM 542. (PREVIOUSLY ADDED) The composition of claim 283, wherein said analyte is a single-stranded DNA sequence fixed to a solid support, said bridging entity comprises non-naturally occurring or artificially modified DNA, said bridging entity first portion comprises a linear single-stranded polynucleotide sequence, said bridging entity first portion is covalently bound to said bridging entity second portion, and said bridging entity second portion is single-stranded and linear and comprises more than one of said nucleic acid sequences or segments.

CLAIM 543. (PREVIOUSLY ADDED) The composition of claim 542, wherein said signalling entities are single-stranded oligo- or polynucleotide sequences and said bridging entity first portion is capable of encoding a gene product or fragment thereof.

CLAIM 544. (PREVIOUSLY ADDED) The kit of claim 411, wherein said analyte is a single-stranded DNA sequence fixed to a solid support, said bridging entity comprises non-naturally occurring or artificially modified DNA, said bridging entity first portion comprises a linear single-stranded polynucleotide sequence, said bridging entity first portion is covalently bound to said bridging entity second portion, and said bridging entity second portion is single-stranded and linear and comprises more than one of said nucleic acid sequences or segments.

CLAIM 545. (PREVIOUSLY ADDED) The kit of claim 544, wherein said signalling entities are single-stranded oligo- or polynucleotide sequences and said bridging entity first portion is capable of encoding a gene product or fragment thereof.

CLAIM 546. (CURRENTLY AMENDED) A kit for the detection in a sample of an analyte having one or more molecularly recognizable portions thereon, comprising as components thereof:

(i) a container carrying a molecular bridging entity comprising a first portion capable of recognizing and binding to or hybridizing with said molecularly recognizable portion on said analyte, and a second portion comprising one, or more nucleic acid sequences or segments; and

(ii) a container carrying more than one signalling entity, each such entity comprising a nucleic acid portion capable of ~~binding to or~~ hybridizing with said bridging entity second portion nucleic acid sequence or segment, and one or more signal generating portions, each such portion being capable of providing a detectable signal,

wherein said analyte is a polynucleotide, said one or more nucleic acid sequences or segments of said second portion are repeating low complexity nucleic acid sequences or segments, and said one or more nucleic acid sequences or segments of said second portion are incapable of hybridizing to the analyte.

CLAIM 547. (PREVIOUSLY ADDED) The kit of claim 546, wherein said signal is amplified because the ratio of the signalling entities to the bridging entity exceeds 5.

* * * * * * *

## REMARKS

Claims pending in this application include: 283-362, 364-380, 382-398, 400-404, 406-439 and 441-547. Claims amended herein include: 283-294, 360-361, 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402, 408, 411-417, 434, 443-460, 464-475, 479-487, 507, 509-514, 520-524, 526, 528-531 and 546. No claims have been canceled or added by this paper. As required by the new revised format for amendments, a complete set of all the claims in this application has been provided above. Entry of the above amendments is respectfully requested.

### I. Claim Amendments

As indicated above, a number of claims have been amended in this paper. The main purpose of these claim amendments is to define Applicants' claimed invention more clearly. The amendments to the claims are summarized below.

In each of claims 283-294, 360-361, 411-417, 434, 443-460, 464-487 and 546, the term "binding to or" has been deleted with respect to the nucleic acid portion of the non-radioactive signalling entities. Thus, the nucleic acid portion is now defined as being "capable of hybridizing with said bridging entity nucleic acid second portion." This description comports with the annealing practice disclosed in the specification on page 17, last four lines.[1]

In several other claims, dependencies have been changed. These include claims 366, 370, 374-375, 379, 384, 388, 392-393, 397, 402 and 408.

Five claims, 507 and 528-531, have been changed to independent form. These claims were objected to as being dependent upon a rejected base claim, but

[1] **This portion of the specification is also cited in the new matter rejection set forth in the February 17, 2004 Office Action (page 4, penultimate paragraph).**

would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 509 has also been amended to recite "[a] polynucleotide sequence covalently attached to a *non-nucleotidyl* saccharide having up to 20 saccharide units." Thus, the language in claim 509 has been made clear that the saccharide unit(s) is/are not intrinsic elements of the nucleotide or polynucleotide. Rather, the saccharide units are extra-nucleotidyl elements that are covalently attached to the nucleotide or polynucleotide. A similar change has been effected to claim 522 ("A circular DNA molecule covalently attached to a non-radiolabeled *non-nucleotidyl* signal generating moiety"). Applicants respectfully point out that the term "non-nucleotidyl" is only further defining the nature of the saccharide or saccharide units covalently attached to claimed polynucleotide sequence. The inserted term -- non-nucleotidyl -- is supported by the specification. For example, members of the non-radioactive signalling entities are described on several pages in the specification. For example, beginning on page 96, last paragraph, and continuing through page 97, first paragraph, each of these members are non-nucleotidyl in nature:

> The Sig moiety employed in the make-up of the special nucleotides of this invention could comprise an enzyme or enzymic material, such as alkaline phosphatase, glucose oxidase, horseradish peroxidase or ribonuclease. The Sig moiety could also contain a fluorescing component, such as fluorescein or rhodamine or dansyl. If desired, the Sig moiety could include a magnetic component associated or attached thereto, such as a magnetic oxide or magnetic iron oxide, which would make the nucleotide or polynucleotide containing such a magnetic-containing Sig moiety detectable by magnetic means. The Sig moiety might also include an electron dense component, such as ferritin, so as to be available by observation. The Sig moiety could

> also include a radiation detecting means. The Sig moiety might also include a hapten component or per se be capable of complexing with an antibody specific thereto. Most usefully, the Sig moiety is a **polysaccharide or oligosaccharide or monosaccharide**, which is capable of complexing with or being attached to a sugar or polysaccharide binding protein, such as a lectin, e.g. Concanavilin A. The Sig component or moiety of the special nucleotides in accordance with this invention could also include a chemiluminescent component.
>
> [emphasis added]

Claim 510 has been amended to recite "[a] polynucleotide sequence covalently attached to a *hormonal* receptor." Support for this change is drawn from the specification, page 12, lines 22-23 ("a receptor portion, to be recognized by its hormone; . . .").

Claim 512 has been amended to clarify that the DNA molecule is both *isolated* and that the polynucleotide portion comprises a *repeating low complexity* sequence, the latter comprising *polydCT* and *polydGA*. Claims 513 and 514 both depend from claim 512 and each has been amended above. Amended claim 513 now recites "[t]he DNA molecule of claim 512, *wherein said DNA molecule is derived from a filamentous phage*." Claim 514 now recites "[t]he DNA molecule of claim 513, *wherein said filamentous phage is* a M13 phage or a M13 phage variant."

Similar amendments have been made to other dependent claims, including claims 520, 521 and 523. The former claim now recites "[t]he DNA molecule of claim 516, *wherein said DNA molecule is derived from a filamentous phage*." The latter claim recites "t]he DNA molecule of claim 520, *wherein said filamentous phage* is a M13 phage or a M13 phage variant." Claim 523 in its amended form

recites "[t]he DNA molecule of claim 522, *wherein said circular DNA molecule is derived from a filamentous phage*."[2]

With respect to the nature of the filamentous phage recited in various claims that have been amended above, Applicants believe that it is clear from a reading of their disclosure, taken with original claim 79, that the DNA molecule recited in that original claim is derived from a filamentous phage. This is particularly so because filamentous phages are well known to consist of two portions -- a DNA molecule and a protein coat. The above amendments to the claims make it clear that the DNA molecule now being claimed is derived from a filamentous phage.

Other changes to the claims have been made. Claim 524 now reads that "t]he DNA molecule of claim 522, further [carries] a polynucleotide portion which comprises a *repeating low complexity* sequence selected from the group consisting of poly dGT, poly dAC, poly dCT, poly dAT, poly dGC, poly dGA, poly dG, poly dC, poly dT, poly dA, and *any combination thereof*. The phrase formerly at the end of claim 524, "a sequence or segment of repeating low complexity," has been deleted. In claim 526, the language has been changed to read "[t]he DNA molecule of claim 524, wherein said *repeating low complexity* sequence is *selected from the group consisting of poly dGT, poly dAC, poly dCT, poly dAT, poly dGC, poly dGA, poly dG, poly dC, and any combination thereof*."

Entry of the above amendment to the claims is respectfully requested.

## II. Rejection Based on Written Description

Claims 512-521, 523, 524 and 526 stand rejected for new matter under 35 USC §112, first paragraph. In the February 17, 2004 Office Action (pages 2-4), the Examiner stated:

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**[2] See the original specification, page 16, lines 11-20; Example 32; and original claims 31, 32, 44, 45, 70 and 71 (DNA polymer or bridging entity "is *derived* from a filamentous phage").**

It is noted that newly added claims 506-531 have been pointed to by applicants to originally filed claims for written support. Newly added claims 506-531 have been pointed to originally filed claims 72-93 and 96-99, respectivley. Several inconsistencies, however, are present which supports this NEW MATTER rejected due to respective claims as listed above not supplying written basis for the now pending claims.

In newly added claim 512 the last line thereof is not the same as the last line of claim 78 which was pointed to for support. In particularl original claim 78 is directed to a DNA molecule which is carrying a polynucleotide portion which comprises sequence options as listed therein. The apparently corresponding now pending claim 512 now also is directed to such a polynucleotide but now also includes an option which is an unspecified "sequence" as well as alternatively including a further subdivision of the polynucleotide to include a segment which is of low complexity. This undefined "sequence" option for claim 512 is NEW MATTER as well as the further subdivision of the polynucleotide to contain a "segment" which subdivision was not previously cited in the pointed to claim 78. Claim 524 also contains this NEW MATTER in corresponding inconsistency from original claim 90. Claims which depend directly or indirectly from claims 512 or 524 also contain this NEW MATTER due to their dependency.

Claim 513 also further contains NEW MATTER in that it cites a filamentous phage which "contains" a DNA molecule whereas in contrast originally filed claim 79 discloses that the DNA molecule "is" the filamentous phage. The added "contains" vs. "is" different is

NEW MATTER in newly added claim 513. This same NEW MATTER is present in claim 520 which is not consistent with the pointed to originally filed claim 86. Claim 521 also contains this NEW MATTER due to its dependence from claim 520. This NEW MATTER issue is also present in claim 523 which is not consistent with the pointed to originally filed claim 89.

The rejection for new matter is respectfully traversed, or believed to have been obviated by several amendments to the claims above.

**A. Claims 512 and 524**

The Office Action rejects the word "segment" and the second instance of the word "sequence" in claims 512 and 524.

As now amended, both claims no longer include "segment" and the second instance of "sequence."

**B. Claims 513, 514, 520, 521 and 523**

With regard to claims 513, 514, 520, 521 and 523, the Office Action rejects the word "containing" in the phrase "filamentous phage containing the DNA molecule."

As amended above, these claims now recite that the *DNA molecule is derived from a filamentous phage* or that the *filamentous phage is* a M13 phage or a M13 phage variant. It is believed that the language in amended claims 513, 514, 520, 521 and 523 is supported by the original specification, including the originally filed claims directed to the same subject matter. As indicated above, a phage, particularly a filamentous phage, never consists of a DNA molecule and nothing else whatsoever. A phage always includes a DNA molecule plus something else, *e.g.*, a protein component or coat. From a strictly logical standpoint, therefore, a DNA molecule never "is" a phage *per se*. Rather, the DNA molecule is a *component* of the phage, or to be even more technically precise, the DNA molecule

is derived from a phage, e.g., filamentous phage.[3] In other words, a phage *comprises* a DNA molecule -- and not the reverse.

In view of the above amendments to the claims, Applicants respectfully request reconsideration and withdrawal of the first new matter rejection.

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**[3] See footnote 2 above, citing the original specification, page 16, lines 11-20; Example 32; and original claims 31, 32, 44, 45, 70 and 71 (DNA polymer or bridging entity "is *derived* from a filamentous phage").**

**III. Rejection Based on Indefiniteness and Written Description**

Claims 283-362, 364-380, 382-398, 400-404, 406-439, 441-505 and 532-547 stand rejected under 35 USC §112, first and second paragraphs. In the Office Action (pages 4-5), the Examiner stated:

> The claimed compositions, kits, and methods, cite a signaling entity nucleic acid portion per se therein which is capable of either binding or hybridizing with the bridging entity nucleic acid second portion. See, for example, claim 283, lines 7-8, specifically. These binding "or" hybridizing options are not commensurate in scope with the interaction cited for said signaling entity with the bridging second portion which only cites annealing and not generic binding practice. This is directly cited in the specification on page 17, last 4 lines, wherein this annealing practice is cited but not generic binding between the above two cited entities. This limited citation to annealing is also present in originally filed instant claim 1.
>
> The above discussed limitation to annealing as originally filed, which is reasonably interpreted as functionally equivalent to hybridizing, whereas, in contrast, the present claims are broader to include generic binding also supports the below NEW MATTER rejection of the presently pending instant claims.
>
> Claims 283-362, 364-380, 382-398, 400-404, 406-439, 441-505, and 532-547 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was

filed, had possession of the claimed invention. The NEW MATTER has been described in the immediately preceding paragraph.

The currently amended claims no longer recite the word "binding" in the context of the association of the signalling entity's nucleic acid with the bridging entity's nucleic acid second portion. Thus, the rejection of claims 283-362, 364-380, 382-398, 400-404, 406-439, 441-505 and 532-547 has been obviated by the amendments above.

In light of the above claim amendments, Applicants respectfully request reconsideration and withdrawal of the rejection for indefiniteness and new matter.

## IV. Prior Art -- First Anticipation Rejection -- Maniatis et al.

Claims 509, 510, 512-517 and 520-527 stand rejected under 35 U.S.C. §102(b) for anticipation by MOLECULAR CLONING [Maniatis et al. (1982)]. In the Office Action (pages 5-6), the Examiner stated:

> Pages 51-54 of Maniatis et al. disclose various filamentous phages which contain DNA molecules as well as both single and double stranded nucleic acid forms thereof which anticipates the above instant claims. Sequences therein are disclosed on page 53 which specifically read on sequences as cited in instant claim 512, for example. Such polynucleotides may also be interpreted reasonably as functional segments therein which also comprise a polysaccharide as required in instant claim 509. It is well known that each nucleotide unit is a saccharide unit as in said claim 509. Page 53 of Maniatis et al. also discloses segments of the M13 DNA which are receptors for restriction endonuclease binding sites as also required in instant claim 510. Page 52 of the reference cites the presence of a covalently

attached polylinker segment which produces a detectable signal via insertions therein thus anticipating instant claim 522 etc.

**A. Claim 509**

Amended claim 509 now recites a polynucleotide sequence covalently attached to "a *non-nucleotidyl* saccharide" having up to 20 saccharide units. It is believed that the foregoing recitation regarding the saccharide being *non-nucleotidyl* materially distinguishes claim 509 from Maniatis et al.

**B. Claim 510**

Amended claim 510 now recites a polynucleotide covalently attached to a *hormonal* receptor. The further definition of the claimed receptor being *hormonal* in nature is believed to materially distinguish Applicants' invention from Maniatis et al.

**C. Claims 512-517 and 520-527**

Claims 512-517 and 520-527 are directed to a DNA molecule that includes a repetitive low complexity sequence. The Office Action asserts that claims 512-517 and 520-527 are anticipated by sequences disclosed on page 53 of Maniatis et al.

The basis for this rejection is somewhat unclear. Maniatis et al. disclose a M13 vector with a polylinker that contains restriction sites. Maniatis et al. do not disclose that the polylinker includes a repetitive low complexity sequence. Restriction sites often include palindromic sequences, but persons in the art would not consider a palindromic sequence to be a repetitive low complexity sequence as set forth in amended claims 512-517 and 520-527. Moreover, claims 512, 524 and 526 no longer recite a generic "sequence or segment of repeating low complexity." They now only recite specific repetitive low complexity sequences that are not disclosed in Maniatis et al. As such, Maniatis et al. do not disclose a polynucleotide with any of the particular low complexity sequences now recited in these claims.

Applicants further respectfully point out that currently amended claim 512 explicitly recites that the DNA molecule is "isolated." When the original claims were filed, the Patent Office did not typically require recitation of the term "isolated" in cases where it was obvious that the limitation was implicitly present in the claim. In view of a growing tendency by the Patent Office and the courts to read claims "super literally," Applicant believes that the intended meaning of the original claim is more accurately expressed today by explicitly reciting that the DNA molecule is *isolated*. Support for such isolated DNA is implicit throughout the original claims and specification.

D. **Claim 522**

As amended above, claim 522 is directed to a circular DNA molecule covalently attached to a non-radiolabeled *non-nucleotidyl* signal generating moiety. The Office Action says that the polylinker of Maniatis et al "produces a detectable signal via insertions therein thus anticipating claims 522 etc." The inclusion of a *non-nucleotidyl* signal generating moiety in claim 522 represents a material element altogether lacking in Maniatis et al.

In view of the foregoing remarks and the above amendments to the claims, Applicants respectfully request reconsideration and withdrawal of the first anticipation rejection.

## V. Prior Art -- Second Anticipation Rejection -- Langer et al.

Claims 506, 509 and 510 stand rejected under 35 USC §102(b) for anticipation by Langer et al. [PNAS 78(11) 6633 (1981)]. In the Office Action (page 6), the Examiner stated:

> Langer et al. discloses polynucleotides of DNA or RNA with biotin covalently attached which covalent attachment also results in antibody attachment which anticipates the above listed instant claims.

Such an antibody is also a receptor for biotin binding as required in certain instant claims such as claim 510. See the entire document and especially page 6635, first column, second full paragraph.

The second anticipation rejection is respectfully traversed.

Applicants respectfully point out that the cited Langer et al. document does not disclose a polynucleotide sequence covalently attached to an antibody. Instead, Langer et al. disclose a biotin molecule covalently attached to a DNA molecule and an antibody that is noncovalently attached to the previously attached biotin molecule. To state it in another way, in Langer et al, biotin is *not* covalently attached to an antibody. Biotin binds *non-covalently* to avidin.[4] Biotin and avidin bind to each other via ionic, polar and/or hydrogen bonds.[5] Because a non-covalent bond is always interposed between biotin and any antibody attached to avidin, the indirect attachment of biotin to the antibody on avidin cannot be characterized as covalent. As such, the antibody in Langer et al. cannot reasonably be construed to be covalently attached to a polynucleotide sequence as set forth in claim 506. Thus, Langer et al. lack a material element recited in claim 506, namely, an antibody that is covalently attached to a polynucleotide sequence.

In view of the foregoing remarks and the clear lack of identity in material elements between the subject matter recited in claim 506 and Langer's disclosure, Applicants respectfully request reconsideration and withdrawal of the second anticipation rejection.

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**[4] *See* Langer et al, US Patent No. 4,711,955, col. 1, lines 44-47, col. 18, lines 19-21, previously cited of record in this application; see also Laitinen et al., "Chicken avidin-related proteins show altered biotin-binding and physico-chemical properties as compared with avidin," Biochem J. 363:609-17 (2002); see in particular the abstract on page 609. A copy of Laitinen et al. is attached as Exhibit 1.**

**[5] *See* Weber et al., "Structural Origins of High-Affinity Biotin Binding to Streptavidin," Science 243:85-88 (1989). A copy of Weber et al. is attached as Exhibit 2.**

## VI. Claim Objections

The Office Action rejects claims 507 and 528-531 for depending from rejected claims. As indicated in the opening remarks of this paper, these five claims have been rewritten in independent form, and thus, should be allowable.

## VII. Dependencies from Cancelled Claims

Applicant has identified various dependent claims that, prior to this Amendment, depended from previously cancelled claims. These errors have been fixed by the amendments to the claims above, and include the following:

Currently amended claims 366, 370, 374, 375 and 379 now depend from claim 443 rather than from previously cancelled claim 363.

Currently amended claims 384, 388, 392, 393 and 397 now depend from claim 444 rather than from previously cancelled claim 381.

Currently amended claim 402 now depends from claim 445 rather than from previously cancelled claim 399.

Currently amended claim 408 now depends from claim 446 rather than from previously cancelled claim 405.

## VIII. Submission of Information Disclosure Statement

Applicants and their attorney(s) are presently reviewing materials and files for the purpose of submitting art-related documents in an Information Disclosure Statement. As soon as any such documents have been located, their undersigned attorney will promptly submit them in an IDS.

Favorable action is requested.

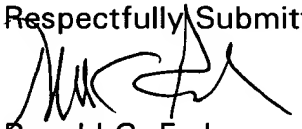
## SUMMARY

This paper is in response to the May 13, 2004 Notice of Non-Compliant Amendment.

Amended in this paper are claims 283-294, 360-361, 366, 370, 374, 375, 379, 384, 388, 392, 393, 397, 402, 408, 411-417, 434, 443-460, 464-475, 479-487, 507, 512-514, 520-524, 526 and 528-531. No new claims are added. No fee is believed due in connection with the filing of this Amendment. If any fee is due, however, The Patent and Trademark Office is hereby authorized to charge the amount of any such fee to Deposit Account No. 05-1135, or to credit any overpayment thereto.

If the Examiner has any questions, he is invited to contact the undersigned attorneys.

Respectfully Submitted



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